2812

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent application of	:	
Katherine GILES et al.	:	Group Art Unit 2812
Serial No. 09/763,641	:	Examiner G. Ghyka
Filed March 29, 2001	:	

METHOD AND APPARATUS FOR FORMING A FILM ON A SUBSTRATE

REQUEST FOR RECONSIDERATION

Honorable Commissioner For Patents
Washington, D.C. 20231

Sir:

A Notice of Appeal was filed in the above-identified application on March 28, 2003. However, Applicants did not previously file a Request For Reconsideration responsive to the final Office Action date June 18, 2002. Accordingly, prior to the submission of a formal Appellant's Brief, Applicants respectfully request that the Examiner reconsider the rejections contained in the final Office Action.

Claims 1-23 and 25-35 stand rejected as being unpatentable over Tsukune et al. (EP 0519079). In the final Office Action, the Examiner states:

> *"Applicants argue that the prior art reference Tsukune et al is directed to a process in which undesirable organic groups are removed, and that Tsukune et al disclose the removal of any organic groups. Applicants further argue that Tsukune*

> *et al does not teach the setting of the deposited film such that carbon containing groups are contained therein. The Examiner maintains that Tsukune et al is replete with references pertaining to the organic groups that remain in the film. See for example page 9, lines 30-35, page 7, lines 15-20 and page 5, linest 35-40. (Emphasis added.)*

As discussed below, Applicants respectfully disagree with the Examiner's apparent suggestion that Tsukune et al. teach that organic groups remain in the film after setting of the film.

The Examiner initially refers to page 9, lines 30-35, of Tsukune et al., which state *inter alia* that the *"amount of the organic groups contained in the above-described thin film of silicon oxide having flatness is preferably as small as possible so far as the planarization is possible... ."* However, the film referred to here by Tsukune et al. is the as-deposited film. The Examiner's attention is directed to the immediately preceding paragraph of Tsukune et al. which reads as follows:

> *"Thus, the silicon oxide film deposited on the substrate according the present invention has at least an organic group and a suitable molecular weight, which enables the thin film to be flattened. Although the content and molecular weight of the organic group cannot be simply described, it is necessary for at least the surface of the formed film to have a flatness to such an extent that the surface does not form a surface of discontinuity even in a portion having a step."*

Thus, Tsukune et al. teach the inclusion of the minimum amount of organic groups needed to achieve planarization of the as-deposited film. No setting of the film has yet to occur. Indeed, once planarization of the film is realized, Tsukune et al. teaches that the organic groups are undesirable and are to be removed prior to setting of the film. See FIG. 5B of Tsukune et al., and the following passages appearing at page 6 of thereof:

> *"... in the present invention, a filmy gel comprising a low-molecular weight polymer containing organic groups is deposited on the substrate. The filmy gel has fluidity, and the film can be leveled... . Thereafter, an undesirable organic group is removed from the leveled film."*
>
> *"... after the organic-group-containing silicon oxide film is deposited, the formed film may be heat-treated to remove the organic groups, thereby causing the organic-group-containing silicon oxide film to be converted to a silicon oxide film."*

The Examiner's references to page 7, lines 15-20, and page 5, lines 35-40, of Tsukune et al. are not understood. The passages at page 7 simply support Applicants assertions that organic groups are to be removed in Tsukune et al. prior to or during curing of the film. The passages at page 5 deal with issues relating to conventional organic SOG materials.

Tsukune et al. is directed to a process in which organic groups are initially included in the film to achieved planarization of the as-deposited film. However, once planarization is achieved, the organic groups become unnecessary, and in

fact, "undesirable". Thus, Tsukune et al. teach that an H_2O plasma treatment and/or heat treatment are carried out to remove the organic groups prior to setting of the film.

Tsukune et al. does not teach setting of the deposited film such that carbon-containing groups are contained therein. Rather, the carbon groups of Tsukune et al. are removed to form a silicon oxide film.

For *at least* the reasons stated above, Applicants respectfully contend that Claims 1-23 and 25-35, are not obvious in view of the teachings of the cited Tsukune et al. reference.

Conclusion

No other issues remaining, reconsideration and favorable action upon the Claims 1-23 and 25-35 now-pending in the application are requested.

Respectfully submitted,

KATHERINE GILES ET AL.

By:

Adam C. Volentine
Reg. No. 33,289

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VOLENTINE FRANCOS, PLLC
12200 Sunrise Valley Drive, Suite 150
Reston, VA 20191
(703) 715-0870